REMARKS

Present Status of the Application

Claim 1 is objected to because of some informalities. The disclosure is required to be corrected for typo on page 23, line 5. Claims 1-2, 7-8 and 10-11 are rejected under 35 U.S.C 103 (a) as being unpatentable over Kim et al.(US Pat. 5,990,978, "Kim 978" hereinafter) in view of Kim et al (US Pat. 6,822,691, "Kim 691" hereinafter). Claims 3-5 are rejected under 35 U.S.C 103 (a) as being unpatentable over Kim 978 in view of Kim 691 and AAPA (Applicant's Admitted Prior Art). Claims 6 and 9 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims.

In response thereto, Applicants respectfully amend claim 1 by incorporating with all limitations of claim 2 and canceled claim 2 therefrom. Applicants respectfully correct the typo in Paragraph [0049] for reciting "locateon." Applicants further amended claims 3, 5, 7 and 10 for precise dependency. After entering the amendment, Claims 1, 3-11 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of the claim rejection under 35 USC 103

Claims 1-2, 7-8 and 10-11 are rejected under 35 U.S.C 103 (a) as being unpatentable over Kim 978 in view of Kim 691. Claims 3-5 are rejected under 35 U.S.C 103 (a) as being unpatentable over Kim 978 in view of Kim 691 and AAPA.

The applicants respectfully traverse the above rejections for the reasons as set forth below.

With respect to claim 1, as amended, recites in part:

A method of motion detection for a 3D comb filter video decoder, comprising:

.....

using $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to determine a motion/still status of the composite video signal, comprising:

using $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to calculate and obtain a plurality of max differences $MD_{x,y}$, wherein $MD_{x,y}$ represents a max difference of the y^{th} pixel on the x^{th} line;

averaging 4 max differences of the contiguous pixels selected to obtain a motion factor $MF_{x,y}$, wherein $MF_{x,y}$ represents a motion factor of the y^{th} pixel on the x^{th} line; and

detecting $MF_{x,y}$ to determine the motion/still status of the y^{th} pixel on the x^{th} line in the composite video signal

(Emphasis Added)

Applicants submit that none of the cited references Kim 978, Kim 691, AAPA, has taught, disclosed, or suggested "using $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to calculate and obtain a plurality of max differences $MD_{x,y}$, wherein $MD_{x,y}$ represents a max difference of the y^{th} pixel on the x^{th} line; averaging 4 max differences of the contiguous pixels selected to obtain a motion factor $MF_{x,y}$, wherein $MF_{x,y}$ represents a motion factor of the y^{th} pixel on the x^{th} line; and detecting $MF_{x,y}$ to determine the motion/still status of the y^{th} pixel on the x^{th} line in the composite video signal" as required by claim 1.

As admitted in the Office Action, Kim 978 only discloses "determining the motion/still status of the signal using the present and previous (m-1) frames. However, the Office Action relies on the Fig.3 of Kim 691 to remedy the deficiency of the Kim 978 that it is known in the art to use more consecutive frames to obtain more precise motion detection. Applicants do not agree with the assertions and respectfully traverse the rejections by the following reasons.

The Kim 691 reference relates to a method of detecting motion in an interlaced video sequence utilizing region by region motion information and apparatus for motion detection. As disclosed in Summary of the Invention, it states that "....provide a motion detection method **in interlaced video**, ... which provides for a robust method of estimating a motion decision parameter which is associated with the point to point degree of motion in the interlaced video sequence." As also disclosed in Abstract, it states that "The motion detection is particularly applicable **in the conversion from interlaced video to progressive**

video."

The Fig.3 of Kim 691 reference, upon which the Office Action relied, discloses an interpolation operation for $x_n(i,h)$ between t=n-1 and t=n+1, as followed:

> The importance or the usefulness of estimating $m_n(i,h)$ can be easily understood from FIGS. 2 and 3. Suppose that precise motion detection information is available when we interpolate $x_n(i,h)$ and suppose there is no motion at the spatial location (i,h), then the best interpolation for $x_n(i,h)$ is to use the value of $x_{n-1}(i,h)$. This follows logically from the fact that no motion is introduced between t=n-1 and t=n+1 at the spatial location (i,h), which very strongly implies that the value of $x_n(i,h)$ would be close to the value of $x_{n-1}(i,h)$. The usage of the motion decision parameter of the present invention is also to utilize the motion information for deinterlacing to properly mix the temporal information. (Col.7, Lines 44-56, Kim)

Therefore, the Kim 691 reference discloses a method of detecting motion in an interlaced video sequence, which does not teach or suggest use more consecutive four frames to obtain more precise motion detection.

Furthermore, the "using $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to calculate and obtain a plurality of max differences $MD_{x,y}$, wherein $MD_{x,y}$ represents a max difference of the y^{th} pixel on the x^{th} line" as claimed is not the notoriously well

known in the art to use more consecutive four frames to obtain more precise motion detection. When the composite video signal is decoded by the **3D comb filter**, the composite video signal is sampled by every 90 degrees of the phase angle. As in NTSC system, when the sampling phases are at 0, 0.5π, π, and 1.5π, respectively. As in PAL system, the sample phase is equal to 0.25π, 0.75π, 1.25π, and 1.75π, respectively, in which the sample phase is shifted with 45 degrees.

The consecutive four frames is particularly designed by the invention for the composite video signal decoded by the **3D comb filter**, and furthermore, "averaging 4 max differences of the contiguous pixels selected to obtain a motion factor $MF_{x,y}$" and "detecting $MF_{x,y}$ to determine the motion/still status of the y^{th} pixel on the x^{th} line in the composite video signal" are also not obvious to a person of ordinary skill in the art at the time the invention was made.

In the Office Action, it is further asserted that the concept of averaging motion values in order to ascertain the status (still/motion) of the signal is conventional in the art and is taken as "Office Notice" regarding a system which averages the computed motion value differences in determining the amount of motion within an image. Applicants respectfully traverse the notice. In response thereto, Applicants have carefully review the Parikh reference (U.S. Pat. No.6,414,719) and do not agree with the assertion that, in view of Parikh, "the concept of averaging motion values in order to ascertain the status (still/motion) of the signal" is conventional in the art.

As disclosed in Parikh, (Col. 3, Lines 48-51), it states that "Embodiments of

the present invention provide advantageously **prediction of pixel values for de-interlacing interlaced scan video signals**, generating progressive frames from interlaced scan video signals." As also shown in FIG.3 and its corresponding description (Col. 2, Line 60- Col.3, Line 40),

"pixel N is the pixel above pixel O in the current field ..., pixel S is the pixel below pixel O in the current field ..., pixel W is the pixel in the previous field (of opposite polarity) at the same spatial location as O (i.e., pixel W and pixel O have the same vertical and horizontal position), and pixel E is the pixel in the next field (of opposite polarity) as the same spatial location as O (i.e., pixel W and pixel O have the same vertical and horizontal position).

Averaging circuit 330 can be coupled to field delay 311 and generate a temporal average signal T_{av} based on pixel E and pixel W signals. ....Averaging circuit 340 can generate a spatial average signal S_{av} based on pixel N and pixel S signals.

Motion detect circuit 320 can generate a motion signal M based on pixel E, W, N, and S signals. ...

Soft switch 350 can output an interpolated pixel i signal based on receiving temporal average signal T_{av} and spatial average signal S_{av} as

signal inputs and motion signal M as a weighting factor input. ...

Median filter 360 can output predicted pixel O signal based at least in part on median filtering pixel i, E, W, N, and S signals."

In Parikh, the average circuit 330 and 340 are used for generating average signals for predicting pixel O signal **for de-interlacing interlaced scan video signals**. Applicants respectfully traverse the notice.

Independent claim 1 is allowable for at least the reasons above and the rejections should be withdrawn.

Because independent claim 1 is allowable over the prior art of record, its dependent claims 3-11 are allowable as a matter of law, for at least the reason that these dependent claims contain all features/elements/steps of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Customer No.: 31561
Docket No.: 12304-US-PA
Application No.: 10/708,875

CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1, 3-11 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date : Jan. 29, 2007

Respectfully submitted,

Belinda Lee

Belinda Lee
Registration No.: 46,863

Jianq Chyun Intellectual Property Office
7th Floor-1, No. 100
Roosevelt Road, Section 2
Taipei, 100
Taiwan
Tel: 011-886-2-2369-2800
Fax: 011-886-2-2369-7233
Email: belinda@jcipgroup.com.tw
Usa@jcipgroup.com.tw